Planning & Requirements CM Practitioner Training

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- Define Configuration Management (CM)
- Define the Tenets of CM
- Define the National Airspace System (NAS)
- Define how CM is utilized in the NAS

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- Configuration Management is defined as a System Engineering process for establishing and maintaining a consistency (baseline) of a product's performance, physical and functional attributes with its requirements, design and operational information throughout its life, (MIL-HDBK-61)
- CM is the process used to define a standard configuration, document the standard, control, record, and track changes to the standard which is also referred to as the "baseline" throughout the life-cycle.

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- A “configuration” is a relative arrangement of interconnected pieces of hardware or software that together form a system or separately have individual functional and physical characteristics
- “Management” is the process by which these entities are controlled during their development, test, redesign and deployment

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- Conceptually, Configuration Management is comprised of five key areas:
  - Planning & Management – organization, define roles & responsibilities, establish management representatives, develop training and resolve conflict resolution
  - Configuration Identification – what are we building
  - Change Management – control changes to those characteristics
  - Configuration Status Accounting – record and report change processing status and product definition data
  - Configuration Verification & Audits – verify compliance with specification and other contract requirement

Configuration Management Tenets

FAA CM

CM Planning & Management

- **CM Policy & Procedures**
- **Enterprise CM CMPP**
- **CCB Charters & Operating Procedures**
- **CM Advisory Team**
- **CM Plans**

Configuration Identification

- **Establish Baselines**
  - Developmental
  - Functional
  - Allocated
  - Product
  - Operational

Configuration Control

- **Identify Need**
- **Describe Change**
- **Coordinate and Review**
- **Disposition Change**
- **Implement Change**
- **Monitor Implementation**
- **Capture Change Data**

Configuration Status Accounting

- **Capture Vendor Change Vehicle (PTR/HDR/ECP) Status**
- **Capture CF/NCP/CCD Status**
- **Capture Change Release (SSD, STB) Status**
- **Capture Associated Baseline Status**

Configuration Audits

- **Monitoring and Oversight**
  - Agency CM Operations
  - Contractor CM
- **Manage & Verify**
  - Internal Audits
  - FCA/PCA
  - Baselines

Information/Data Management

Secure Storage of and Accessibility to Digital Data. Includes Configuration Data and Related Program Information such as:

• Documents • Drawings • SW Code • Change Data • Plans

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- Planning & Management
  - This activity includes planning, coordinating, and managing all tasks necessary to implement configuration management principles and to conduct configuration management activities. Configuration Management planning and management occurs through out all life-cycle phases.
    - FAA Order 1800.66
    - FAA Standard –058
    - Individual CCB Charters
    - Individual CCB CM Plans
    - Individual CCB CM Procedures
    - CCB Service Level Agreements

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- Configuration Identification
  - A configuration is an aggregate of hardware/software/firmware, or any of its discrete portions, which satisfies an end-use function. and is designated by the FAA for CM. Each CI identifier in the NAS will be listed in NAS-MD-001, the Master Configuration Index, which specifies CIs within each lifecycle phase of the NAS. Any item identified by the FAA to be under CM cannot be modified without prior approval through the NCP process.

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- Change Management
  - A systematic and measurable change process that is consistent with management policy and documented in applicable charters and operating procedures. Insure proposed changes are properly identified, prioritized, documented, coordinated, evaluated, adjudicated and tracked to ensure incorporation in all systems and spares.

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- Configuration Status Accounting
  - The development and maintenance of configuration information describing configuration items or products in a systematic and disciplined manner. Status accounting includes developing and maintaining site configuration data and the incorporation of modification data.

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- Configuration Verification & Audits
  - Verification that a products requirements have been met and the product design meeting those requirements has been accurately documented before a product configuration is baselined. Verification takes the form of:
    - Functional Configuration Audits (FCA) – a systematic comparison of requirements
    - Physical Configuration Audits (PCA) – a physical determination whether the product is consistent with its design documentation
  - Additionally, operational systems must be periodically validated to ensure consistency between a product and its current baseline documentation. Verification of incorporation of modifications is a critical function of this activity.

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- The National Airspace System (NAS)
  - The National Airspace System (NAS) is comprised of approximately 500 Air Traffic Control systems at 32,500 facilities throughout the continental US and its off-shore facilities. The FAA is responsible for the continuous acquisition and operation of the NAS. This involves maintenance of existing equipment, introduction of new technology to extend the life of existing systems, and introduction of new systems to meet the new requirements of the aviation community. All maintenance, product improvement, and new systems introduction must take place without degrading the quality of service to customers.

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- The FAA provides Air Traffic services using a life cycle process that defines, develops, deploys and maintains operational systems.

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- Define Configuration Control Board (CCB)
  - The Configuration Control Board is the official agency-authorized vehicle to establish baselines and to approve or disapprove subsequent changes to those baselines. The NAS CCB is the highest level nationally; it is responsible for the formal review and resolution of changes to all National documentation. Other CCBs are established as necessary and are listed below:

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- The NAS Configuration Control Board
  - Terminal Automation CCB
  - Enroute & Oceanic CCB
  - System Operations CCb
  - Communications CCB
  - Flight Services CCB
  - Surveillance & Weather CCB
  - Navigation CCB
  - Power Systems & Facilities & Infrastructure CCB
  - Eastern Service Area CCB
  - Central Service Area CCB
  - Western Service Area CCB

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- NAS-MD-001, Master Configuration Index
- FAA Order 1800.66, Configuration Management Policy
- FAA-STD-058, Facility Configuration Management

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- FAA Form 1800-2 – critical blocks
  - Block 1, must contain the correct CI
  - Block 3, Local (check block 17), National, or Test (Test Plan)
  - Block 4,
  - Block 5, Time Critical & Urgent must be justified in block 6
  - Block 13, must have correct baseline documentation
  - Block 14, must have correct CI/Subsystem identified
  - Block 15, FA Type – very important for NAV CCB
  - Block 17, must have locations for Local
  - Block 18, must have FACCODE, important for NAV CCB
  - Block 19,
  - Block 21, must contain location name if marked Local

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- Block 22c – Interfaces
- Block 22d – Cost estimate
- Block 22e – Funding source
- Block 22g – Schedule information

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- FAA Form 1800-49 Configuration Control Decision (CCD)

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- Casefiles for National/Local/Test - casefiles for modifications, testing and siting criteria violations
    - Receive casefile(s), perform preliminary prescreening (accurateness of form) - is Test Plan attached (Test casefiles only)
    - process casefile for Service Area Review (may include areas outside of ATO - siting criteria casefiles only)
    - Comment resolution Process
    - Ensure attachment of appropriate SMS documentation
    - Obtain ATO-A Safety review
    - Obtain management signature
    - Forward casefile to appropriate prescreening review - differs depending on the Configuration Control Board (CCB) involved
    - Track casefile through the approval process
    - Be aware of the Resolution of Comment (ROC) process and involved as necessary to achieve desired results
    - ensure distribution of Configuration Control Decision (CCD) (approvals)
    - Track CCD to closure

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- Casefiles for Facility Baselines/Space - which are always marked Local in scope
    - Receive casefile(s), perform preliminary prescreening (accurateness of form)
    - process casefile for Service Area Review (and Washington)
    - Comment resolution process
    - Ensure attachment of appropriate Safety Management System (SMS) documentation
    - Obtain ATO-A Safety review
    - Obtain management signature
    - Assign National Airspace System (NAS) Change Process (NCP) number
    - Prepared draft Configuration Control Decision
    - Process NCP to appropriate Configuration Control Board (CCB) Chairperson for approval (there are 14, which is down from 26)
    - Distribute CCD actions as necessary
    - Participate in the drawing update process
    - Apply digital signature to drawings (allows Computer Aided Engineering Design (CAEG) to know drawing is ready Executive Secretary signature
    - Track CCD to closure

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- NCPs received for Must Evaluation
  - Process NCPs for Must Evaluation, NCPs marked as 'Local' or 'Test; are distributed to the appropriate Technical Service Operations Group (TSOG) organizations for review and comment.
  - Track NCP through ESA Review.
  - Prepare the organizational (ESA) comments for management review and signature
  - Submit organizational comments to management for signature
  - Track NCP approval if NCP impacts 'only' ESA facilities, ie., the approval of NCPs with National implication is not tracked to approval, this is the responsibility of the appropriate CCB and AJW (formerly AOS) organizations.
  - Track CCDs with only ESA applicability to closure.